

## Ares I-X Flight Test—On the Fast Track to the Future

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### Abstract

In less than two years, the National Aeronautics and Space Administration (NASA) will launch the Ares I-X mission. This will be the first flight of the Ares I crew launch vehicle, which, together with the Ares V cargo launch vehicle, will send humans to the Moon and beyond. Personnel from the Ares I-X Mission Management Office (MMO) are finalizing designs and fabricating vehicle hardware for an April 2009 launch.

Ares I-X will be a suborbital development flight test that will gather critical data about the flight dynamics of the integrated launch vehicle stack; understand how to control its roll during flight; better characterize the severe stage separation environments that the upper stage engine will experience during future flights; and demonstrate the first stage recovery system. NASA also will modify the launch infrastructure and ground and mission operations.



**Figure 1. The Ares I-X Flight Test Vehicle incorporates both flight-like and mass simulator hardware.**

The Ares I-X Flight Test Vehicle (FTV) will incorporate flight and mockup hardware similar in mass and weight to the operational vehicle. It will be powered by a four-segment Solid Rocket Booster (SRB), which is currently in Shuttle inventory, and will include a fifth spacer segment and new forward structures to make the booster approximately the same size and weight as the five-segment SRB.

The Ares I-X flight profile will closely approximate the flight conditions that the Ares I will experience through Mach 4.5, up to approximately 130,000 feet and through maximum dynamic pressure ("Max Q") of approximately 800 pounds per square foot. Data from the Ares I-X flight will support the Ares I Critical Design Review (CDR), scheduled for 2010.

Work continues on Ares I-X design and hardware fabrication. All of the individual elements are undergoing CDRs, followed by an integrated vehicle CDR in March 2008. The various hardware elements are on schedule to begin deliveries to Kennedy Space Center (KSC) in early September 2008.

Ares I-X is the first step in the long journey to the Moon and farther destinations. This suborbital test will be NASA's first flight of a new human-rated launch vehicle in more than a generation. This promises to be an exciting time for NASA and the nation, as we reach for new goals in space exploration.